

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)

OuterLink, Inc.)

Application For a Blanket Authorization To)
Operate 20,000 Mobile Earth Terminals in)
the 1530-1559 MHz and 1638.5-1642 MHz)
Frequency Bands (E980203))

File No. SES-LIC-19980415-00436

ORDER AND AUTHORIZATION

Adopted: June 28, 2002

Released: July 2, 2002

By the Deputy Chief, Satellite Division, International Bureau:

I. Introduction

1. By this Order and Authorization, we grant OuterLink, Inc.¹ (OuterLink) blanket authority, subject to certain conditions, to operate up to 20,000 mobile earth terminals (METs), on a non-interference basis, to provide mobile satellite service (MSS) in the United States via the U.S.-licensed satellite, AMSC-1, at 101° W.L. in portions of the L-band spectrum.² Grant of this application will facilitate increased competition in the MSS market, providing U.S. consumers and users with innovative and improved mobile data communications service offerings at lower prices.

II. Background

2. On April 15, 1998, OuterLink filed an application requesting blanket authority to operate up to 20,000 full duplex³ METs throughout the United States via the U.S.-licensed AMSC-1

¹ OuterLink was formerly named Newcomb Communications.

² The "L-band" is a general designation for frequencies from 1 to 2 GHz. In this Order and Authorization, however, the term "L-band" denotes only the 1545-1559 MHz and 1646.5-1660.5 MHz frequency band ("upper L-band") and the 1525-1530 MHz, 1530-1544 MHz, and 1626.5-1645.5 MHz frequency bands ("lower L-band"). The United States is the only country that distinguishes between the "upper" and "lower" L-band.

³ A full-duplex MET can receive a data message while transmitting one. Conversely, a half-duplex MET cannot receive and transmit data messages simultaneously. It must finish transmitting before it can receive an incoming message.

satellite using frequencies coordinated and in use by the Inmarsat Ventures plc (Inmarsat)⁴ satellite system.⁵ AMSC-1 satellite is owned and operated by Mobile Satellite Ventures Subsidiary, LLC (MSV).⁶ OuterLink's proposed METs will use wide-band direct sequence spread spectrum (DSSS) multiple access, operating on frequency bands 1638.5-1642 MHz (transmit) and 1530-1559 MHz (receive). DSSS is a co-frequency spread spectrum technique designed to widely disperse signal energy that lowers transmitted power spectral density and thus intersystem interference potential. OuterLink says the METs will be used to provide mobile packet data service, on a non-common carrier basis, to land vehicles, maritime vessels, aircraft and certain fixed installations throughout the continental United States. According to OuterLink, the METs are capable of transmitting bursts or packets, typically 30 milliseconds in duration. Each MET will consist of transmit and receive communications antennas, a Global Positioning System (GPS) receive antenna, the transceiver with internal GPS Engine, and user interface ports, including both discrete sensor ports and serial data ports to interface with keyboard/display devices, external microprocessors or sensors.⁷ OuterLink is currently authorized to conduct commercial trial's using 20,000 METs, under special temporary authority (STA). Pursuant to STA, OuterLink is required to provide test data demonstrating the ability and performance characteristics of its METs, e.g., preemption time and prioritization scheme of the downlink channel to implement priority and preemption of their normal traffic to accommodate aeronautical safety service requirements.⁸

3. Petitions to deny OuterLink's application were filed by Globalstar L.P. (Globalstar)⁹ and Space System License, Inc. and Iridium LLC (collectively Iridium).¹⁰ An informal objection was filed by Inmarsat.¹¹ The National Telecommunications and Information

⁴ Inmarsat, formerly the International Maritime Satellite Organization, was an intergovernmental organization created to develop a global maritime satellite system to meet commercial maritime and safety communications needs of the United States and foreign countries.

⁵ MSV is representing OuterLink in coordinating with Inmarsat and other non-US MSS providers operating within the L-band. *See* OuterLink Application Exhibit I "Frequency Coordination Report."

⁶ MSV is part of a Canadian-American joint venture of the former U.S. licensee, Motient Services, Inc. (Motient) and the Canadian licensee, TMI Communications and Company, LP (TMI). *See Motient Services Inc. and TMI Communications and Company, LP Assignors*, 16 FCC Rcd 20,469 (2001). At the time OuterLink filed its application, Motient (formerly AMSC Subsidiary Corporation) was the AMSC-1 licensee. In order to avoid confusion, both AMSC and Motient are referred to as MSV in this Order and Authorization.

⁷ *See* OuterLink Application at 3.

⁸ OuterLink request for Special Temporary Authority to continue conducting commercial trials via AMSC-1 Satellite, 16 FCC Rcd 8389 (DA 01-664, released April 16, 2001)

⁹ *See* Globalstar Petition to Deny in Part, filed Oct. 19, 1998.

¹⁰ *See* Iridium Petition to Deny or Defer, filed Oct. 19, 1998.

¹¹ *See* Letter from John P. Janka, Counsel to Inmarsat, to Thomas S. Tycz, Chief, [sic] Satellite and Radiocommunication Division, International Bureau, FCC, dated April 23, 2002 (Inmarsat Letter).

Administration (NTIA) submitted comments on OuterLink's proposal.¹²

III. Discussion

Petitions to deny

4. Globalstar objects to OuterLink's proposal on two grounds. First, Globalstar argues that MSV's current operations in the lower L-band does not afford MSV sufficient capacity to support the 20,000 METs specified by OuterLink in its application because the special temporary authority limited MSV to operate only 15,100 METs.¹³ Second, Globalstar contends that OuterLink's application violates the so-called "freeze" the Commission placed on the filing of applications to use the lower L-band frequencies, pending adoption of regulatory policies for the provision of service in the lower L-band. Iridium raises the same objections. In addition, Iridium contends that OuterLink does not provide sufficient information to permit Iridium to determine whether OuterLink's operation in the 1638.5-1642 MHz band would cause harmful out-of-band interference to the Iridium satellite system operating in the 1621.35-1626.5 MHz band. Consequently, Iridium asks that grant of OuterLink's application be conditioned on completion of coordination with Iridium.

5. At the time Globalstar and Iridium filed their objections, no U.S. space station had regular authority to operate in the lower L-band. The Commission also had not adopted rules and policies governing the use of frequencies in the lower L-band.¹⁴ MSV was authorized to use spectrum in the lower L-band coordinated for the U.S.-licensed satellite system, on a temporary basis.¹⁵

6. On February 7, 2002, the Commission released the *Lower L-band Report and Order* establishing licensing rules and policies governing use of the lower L-band. In view of this action, issues related to the scope of MSV's authority and the so-called "freeze" are moot.¹⁶

7. Regarding out-of-band interference, we find no need to impose a condition on OuterLink to coordinate with Iridium. Rather, we have imposed a condition to ensure that OuterLink's METs operate in a manner consistent with the Commission's out-of-band emissions

¹² See Memorandum from Jim Vorhies, Acting Program Manager, Spectrum Plans, NTIA, to Sylvia Lam, Systems Analysis Branch, Satellite Division, International Bureau, FCC, dated Feb. 19, 2002 (NTIA memorandum).

¹³ See *AMSC Subsidiary Corporation*, 10 FCC Rcd 10458 (Int'l Bur. 1995).

¹⁴ See *In the Matter of Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-band*, Notice of Proposed Rulemaking, 11 FCC Rcd 11675 (1996) (*Lower L-band Notice*).

¹⁵ See *AMSC Subsidiary Corporation*, 10 FCC Rcd 10458 (Int'l Bur. 1995).

¹⁶ See *In the Matter of Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-band*, Report and Order, 17 FCC Rcd 2704 (2002) (*Lower L-band Report and Order*).

requirements.¹⁷ Moreover, in the event that Iridium actually experiences harmful interference from out-of-band emissions caused by OuterLink, we expect the parties to attempt to resolve the matter. If a mutually acceptable solution is not possible, the Commission will then intervene.¹⁸

Inmarsat's Informal objection

8. OuterLink points out that in tests conducted in 1997, that led to its grant of temporary authority in the lower L-band, OuterLink's proposed use of DSSS technique would reduce the potential for interference to the Inmarsat system.¹⁹ More recently, in a letter filed April 3, 2002, OuterLink submits that recent tests affirm the 1997 test results. OuterLink further points out that in response to the April 2002 test results, Inmarsat informed the Commission that Inmarsat did not oppose OuterLink's continued operations in the lower L-band. OuterLink notes that after nearly four years of its system's operation, there have been no complaints of harmful interference, nor does it anticipate the situation will change after OuterLink places its proposed 20,000 METs into operation.²⁰

9. Inmarsat takes a different view of OuterLink's current operation. Inmarsat opposes the grant of OuterLink's application, unless and until the OuterLink service is coordinated between Inmarsat and MSV. Inmarsat says it is concerned that the grant of OuterLink's application would give Outerlink authority to object to interference caused by Inmarsat. This, says Inmarsat, would be inconsistent with the current state of coordination between Inmarsat and MSV. Inmarsat states that when OuterLink filed its application in 1998, Inmarsat was assured that OuterLink's services would not interfere with Inmarsat's system. Based on these assurances, Inmarsat says it provided limited consent to allow OuterLink to operate using spectrum in the lower L-band assigned for Inmarsat's use. Inmarsat adds, however, that at no time did it agree to OuterLink's operations being protected from any interference that might be caused by Inmarsat's system. Inmarsat states that it specifically acknowledged Outerlink's possible vulnerability to interference from Inmarsat, and thus, Inmarsat reserved the right to withdraw its consent at any time.²¹

¹⁷ See *Amendment of Part 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements; Petition of the National Telecommunications and Information Administration to Amend Part 25 of the Commission's Rules to Establish Emissions Limits for Mobile and Portable Earth Stations Operating in the 1610-1660.5 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, FCC 02-134 (rel. May 14, 2002).

¹⁸ See, e.g., *SatCom Systems*, 14 FCC Rcd 20798 (1999), *aff'd sub nom. AMSC v. FCC*, 216 F.3d 1154 (D.C. Cir. 2000).

¹⁹ See OuterLink Application Exhibit I.

²⁰ See Letter from Bruce A. Olcott, Counsel to OuterLink, to Thomas Tycz, Chief Satellite Division, International Bureau, FCC, dated April 3, 2002, citing a letter from Donald M. Kennedy, Director of International Regulatory Affairs, Inmarsat, to Thomas Tycz, Chief, Satellite and Radiocommunication Division, International Bureau, FCC, dated Dec. 19, 2000.

²¹ See Inmarsat Letter, *supra*.

10. Since 1998, Inmarsat states that it has been providing services to customers, including the U.S. Navy, from a satellite at 98° W.L. orbital location, which has increased the potential of mutual interference effects by 20dB. Nevertheless, says Inmarsat, OuterLink has continued to offer its service in the same portion of the lower L-band. Inmarsat also observes that OuterLink has complained on a number of occasions about interference from Inmarsat's operations, despite the fact that OuterLink has been authorized to operate in the lower L-band on a temporary, non-interference basis. Moreover, Inmarsat says it anticipates that the use of its spectrum by the U.S. Navy and other customers will steadily increase, making interference to OuterLink's terminals more likely. Further, Inmarsat says it is concerned that if OuterLink's application is granted, OuterLink may attempt to use the license to claim protection from Inmarsat's operations and thereby limit Inmarsat's use of its assigned spectrum to the detriment of Inmarsat's service to its customers, including the U.S. Navy. Consequently, Inmarsat suggests, that OuterLink modify its service to use spectrum that MSV has coordinated with Inmarsat in the North America coverage area. Otherwise, Inmarsat asks that OuterLink's application be denied, or alternatively, that any grant of authority be expressly conditioned on OuterLink not being entitled to claim any protection from interference caused by Inmarsat's operations.²²

11. In response to Inmarsat's concerns, OuterLink suggested three conditions on the grant of its application.²³ Inmarsat, in turn, responded with a letter indicating it would no longer object to the grant of OuterLink's application, subject to the following conditions:

1. OuterLink cannot claim protection from interference from earth stations communicating with Inmarsat satellites and operating in the 1638.5-1642.0 MHz band unless and until OuterLink's service is coordinated between Inmarsat and MSV.
2. In the absence of a coordination agreement between Inmarsat and MSV, OuterLink must provide its service on a non-interference basis.
3. In light of its continued commitment not to cause interference to Inmarsat, OuterLink should continue to be held to its prior obligation not to interfere with Inmarsat's system in the 1638.5-1642.0 MHz band.
4. OuterLink's license should be subject to the terms of any agreements between Inmarsat and MSV regarding the coordination of spectrum in the L-band as they currently exist and as they may be modified by future negotiations.²⁴

Inmarsat states that OuterLink has agreed to these conditions.²⁵ We have reviewed the concerns raised by Inmarsat and OuterLink in this regard and have imposed conditions similar to those agreed to by Inmarsat and OuterLink to address these concerns.

²² *Id.*

²³ See Letter from Bruce A. Olcott, Counsel to OuterLink, to Thomas Tycz, Chief Satellite Division, International Bureau, FCC, dated April 3, 2002.

²⁴ See Letter from John P. Janka, Counsel to Inmarsat, to Thomas S. Tycz, Chief, [sic] Satellite and Radiocommunication Division, International Bureau, FCC, dated June 6, 2002.

²⁵ *Id.*

Priority and Preemptive Access

12. We also note that NTIA has reviewed OuterLink's proposal and has raised concerns about whether the DSSS co-frequency spread spectrum operations OuterLink proposes are fully compatible with Inmarsat's Global Maritime Distress and Safety System (GMDSS). US Footnote 315 to the Table of Frequency Allocations to Section 2.106 of the Commission's rules provides for real-time access and priority preemption capability for maritime mobile service and distress and safety communications.²⁶ NTIA suggests that OuterLink's compatibility with the Inmarsat system requires further validation to ensure that its operation will not interfere with important safety-related communications services. Consequently, NTIA conditions its approval upon requiring that the license be limited to a period of three years. To address NTIA's concerns, we will impose a three-year license period. In addition, we will impose additional conditions on OuterLink's operation of the METs to ensure that its system does not cause harmful interference to other operating systems.

IV. Conclusion

13. We find that OuterLink has demonstrated that its operations will comport with the Commission's requirements and that it is qualified to hold the blanket earth station authorizations requested. Consequently, we grant OuterLink's application, subject to the conditions set forth below, authorizing OuterLink to provide MSS service in the United States over the AMSC-1 satellite using frequencies coordinated and in use by the Inmarsat satellite system. We also deny the petitions to deny filed by Globalstar and Iridium.

V. Ordering Clauses

14. Accordingly, IT IS ORDERED that Application File No.SES-LIC-19980415-00436 IS GRANTED and OuterLink, Inc. IS AUTHORIZED to operate up to 20,000 mobile earth terminals (METs) in the frequency bands 1638.5-1642 MHz and 1530-1559 MHz through the AMSC-1 space station at 101° W.L. to the extent indicated herein, in accordance with the technical specifications set forth in its application and its Radio Station Authorization, and consistent with the Commission's rules, subject to the conditions set forth below.

15. IT IS FURTHER ORDERED that in the absence of a continuing annual operator-to-operator coordination agreement, OuterLink, Inc.'s operation in the frequency bands 1638.5-1642 MHz and 1530-1559 MHz will be on a non-harmful interference basis. Consequently, in the absence of a coordination agreement, OuterLink, Inc. shall not cause harmful interference to any other lawfully operating satellite or radio facility and shall cease operations upon written notification of such interference. Furthermore, OuterLink, Inc. must notify all other operators in these frequency bands that it will be operating on a non-harmful interference basis. OuterLink,

²⁶ 47 C.F.R. § 2.106

Inc. must also notify its customers in the United States that its operations are on a non-harmful interference basis.

16. IT IS FURTHER ORDERED that operation of the METs will not be protected from the Inmarsat satellites in the 1638.5–1642.0 MHz band, unless and until Outerlink’s service is coordinated between Inmarsat and MSV.

17. IT IS FURTHER ORDERED that OuterLink, Inc., in light of its continued commitment not to cause interference to Inmarsat Ventures plc, OuterLink, Inc. shall continue to be held to its prior obligation not to interfere with Inmarsat Ventures plc in the 1638.5-1642 MHz band, consistent with the arrangement between OuterLink and Inmarsat, described in the letter from John Janka, Counsel to Inmarsat, to Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, International Bureau, FCC, dated June 6, 2002. *See also* letter from John Janka, Counsel to Inmarsat, to Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, International Bureau, FCC, dated April 23, 2002.

18. IT IS FURTHER ORDERED that OuterLink, Inc. must operate its METs in a full-duplex mode and have the following minimum set of capabilities to ensure compliance with US Footnote 308 to Section 2.106 of the Commission’s rules, 47 C.F.R. § 2.106, and ITU Radio Regulations 5.357:

- a. All MET transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to aeronautical distress and safety-related communications sharing the band;
- b. Each MET with a requirement to handle maritime distress and safety data communications shall be capable of either recognizing message and call priority identification when transmitted from its associated Land Earth Station (LES) or accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment;
- c. Each MET shall be assigned access to a unique technical identification number that will be transmitted upon any attempt to gain access to a system;
- d. After a MET has gained access to a system the mobile terminal shall be under control of a Land Earth Station and shall obtain all channel assignments from it;
- e. All METs that do not continuously monitor a separate signaling channel shall have provisions for signaling within the communications channel;
- f. Each MET shall automatically inhibit its transmissions if it is not correctly receiving a separate signaling channel or signaling within the communications channel from its associated Land Earth Station; and
- g. Each MET shall automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signaling or communications channel it is receiving from its associated Land Earth Station.

19. IT IS FURTHER ORDERED that the full duplex METs operating in the 1525-1530 MHz, 1530-1544 MHz and 1626.5-1645.5 MHz bands shall have the following minimum set of capabilities to ensure compliance with Footnote 5.353A and the priority and real-time preemption requirements imposed by US Footnote 315 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106 and ITU Radio Regulations 5.357.

- a. All MET transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications sharing the band;
- b. Each MET with a requirement to handle maritime distress and safety data communications shall be capable of either (1) recognizing message and call priority identification when transmitted from its associated Land Earth Station (LES) or (2) accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment;
- c. Each MET shall be assigned access to a unique technical identification number that will be transmitted upon any attempt to gain access to a system;
- d. After a MET has gained access to a system the mobile terminal shall be under the control of a LES and shall obtain all channel assignments from it;
- e. All METs that do not continuously monitor a separate signaling channel or signaling within the communications channel shall monitor the signaling channel at the end of each transmission;
- f. Each MET shall automatically inhibit its transmissions if it is not correctly receiving a separate signaling channel or signaling within the communications channel from its associated LES;
- g. Each MET shall automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signaling or communications channel from its associated LES; and
- h. Each MET with a requirement to handle maritime distress and safety communications shall have the capability within the station to automatically preempt lower precedence traffic.

20. IT IS FURTHER ORDERED that, in accordance with US Footnote 308, the operation of OuterLink, Inc.'s METs, in the bands 1545-1558.5 and 1646.5-1660 MHz, is on a secondary basis to U.S. AMS(R)S requirements of other U.S.-authorized MSS providers operating in the 1545-1559 and 1646.5-1660 MHz bands.

21. IT IS FURTHER ORDERED that OuterLink's METs shall comply with the out-of-band emission limits set forth in Section 25.216 of the Commission's rules. *See Out-of-Band Emission Order*, FCC 02-34 (rel. May 14, 2002).

22. IT IS FURTHER ORDERED that OuterLink, Inc. is not authorized to operate in the 1544-1545 MHz and 1645.5-1646.5 MHz bands that are limited in the United States exclusively for use for distress and safety communications. See C.F.R. Section 2.106nn.727A, 734B.

23. IT IS FURTHER ORDERED that this authorization does not permit OuterLink, Inc. to provide commercial mobile radio service (CMRS) to end-users, either the public, or such classes of users as to be effectively available to a substantial portion of the public, for profit and for interconnection with the public switched network. If OuterLink, Inc. wishes to provide CMRS, which is classified as a common carrier service, it must obtain authority to modify this license to permit the provision of common carrier service and must obtain any requisite authority under Section 214 of the Communications Act, 47 U.S.C. § 214, before providing such service.

24. IT IS FURTHER ORDERED that OuterLink, Inc. must maintain a current listing of platform users on which terminals are located, including the user/customer phone number and necessary information to terminate operation if harmful interference is caused to the Global Maritime Distress and Safety System (GMDSS).

25. IT IS FURTHER ORDERED that the METs authorized by this *Order and Authorization* must employ short transmission bursts. These bursts or packets are typically 30 milliseconds in duration. The maximum packet length shall be no longer than 275 milliseconds in duration. OuterLink, Inc. must monitor its traffic loading to ensure that the total power transmitted in OuterLink's 3.5 MHz channel at any given time does not exceed 22 dBW EIRP. The maximum EIRP and EIRP density of each MET shall be limited to 14.76 dBW and -14.6 dBW/4kHz, respectively.

26. IT IS FURTHER ORDERED that each MET be tunable over the entire range of frequencies authorized for Mobile Satellite Ventures Subsidiary, LLC downlink transmissions, such that the integrity of AMS(R)S spectrum is maintained as a contiguous block of spectrum. Mobile Satellite Ventures Subsidiary, LLC/OuterLink, Inc. must provide test data demonstrating the ability and performance characteristics of the mobile earth terminals, *e.g.*, preemption time, and prioritization scheme of the downlink channel to implement priority and preemption of their normal traffic to accommodate aeronautical safety service requirements.

27. OuterLink, Inc.'s system must not inhibit future changes or expansions of GMDSS communications capabilities, including the use of different modulation and multiple access schemes or the relocation or the use of other Inmarsat satellites for GMDSS.

28. IT IS FURTHER ORDERED that the Petition to Deny in Part of Globalstar, L.P. and the Petition to Deny or Defer of Space System License, Inc. and Iridium LLC ARE DENIED.

29. IT IS FURTHER ORDERED that this license shall not vest in OuterLink, Inc. any right to operate Earth stations or use the assigned frequencies beyond the term thereof or in any manner other than authorized herein, and neither the licensee nor the rights granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act.

30. IT IS FURTHER ORDERED that the license term for the METs that are authorized by the *Order and Authorization* be for three years.

31. IT IS FURTHER ORDERED that OuterLink, Inc. be afforded thirty days to decline this authorization. Failure to respond within this period will constitute formal acceptance of the authorization.

FEDERAL COMMUNICATIONS COMMISSION

Cassandra C. Thomas
Deputy Chief, Satellite Division